

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
29 December 2004 (29.12.2004)

PCT

(10) International Publication Number  
**WO 2004/113281 A1**

(51) International Patent Classification<sup>7</sup>: C07C 317/30

(21) International Application Number:  
PCT/KR2004/001518

(22) International Filing Date: 23 June 2004 (23.06.2004)

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:  
10-2003-0041547 25 June 2003 (25.06.2003) KR

(71) Applicant (*for all designated States except US*): JE IL PHARMACEUTICAL CO., LTD. [KR/KR]; 745-4 Banpo-1dong, Seocho-gu, Seoul 137-810 (KR).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): KIM, Myung-Hwa [KR/KR]; #304-1202 Ssang-Yong Apt., 621, Sangha-ri, Gusung-myun, Yongin city, Kyunggi-do 449-942 (KR). CHUN, Kwangwoo [KR/KR]; #102-1502 Jinwoo Apt., 265, Samga-dong, Yongin city, Kyunggi-do 449-718 (KR). CHOI, Jae-Won [KR/KR]; 2/9 29-53 Susak-dong, Eunpyung-gu, Seoul 122-090 (KR). JOE, Bo-Young [KR/KR]; #101-813 Injung-Melody Apt., Dunjeon-ri,

Pogok-myun, Yongin city, Kyunggi-do 449-812 (KR). PARK, Sang-Woo [KR/KR]; 13/3 205 Sungwon Jutaek, 366-1 Yuljeon-dong, Jangan-gu, Suwon city, Kyunggi-do 440-827 (KR). KIM, Kwang Hee [KR/KR]; #112-035 Hansung Apt., 380, Gugal-ri, Kihung-eub, Yongin city, Kyunggi-do 449-735 (KR). OH, Byung-Kyu [KR/KR]; B-301 Jin-Heung Park, 74-16 Gimnyangjang-dong, Yongin city, Kyunggi-do 449-924 (KR). CHOI, Jong-Hee [KR/KR]; 16/2 1029-13 Gwonseon-dong, Gwonseon-gu, Suwon city, Kyunggi-do 441-822 (KR).

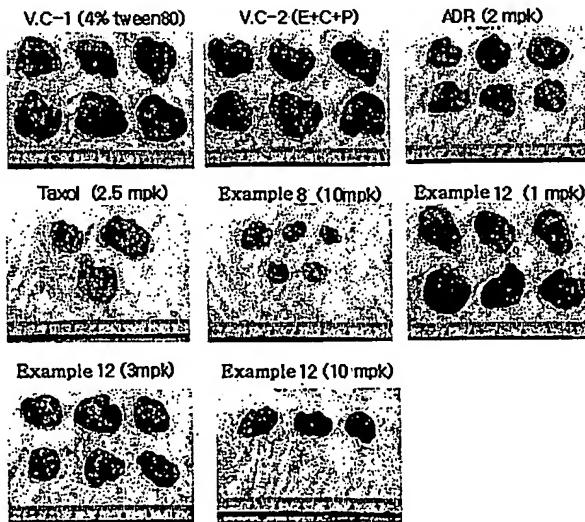
(74) Agent: LEE, Won-Hee; 8th Fl., Sung-ji Heights II, 642-16 Yoksam-dong, Kangnam-ku, Seoul 135-080 (KR).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH,

[Continued on next page]

(54) Title: TRICYCLIC DERIVATIVES OR PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF, THEIR PREPARATIONS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM



(57) Abstract: The present invention relates to tricyclic derivatives or pharmaceutically acceptable salts thereof, their preparations and pharmaceutical compositions containing them. More precisely, the present invention relates to tricyclic derivatives as colchicine derivatives, pharmaceutically acceptable salts thereof, their preparations and pharmaceutical compositions containing them. Tricyclic derivatives of the present invention show very powerful cytotoxicity to cancer cell lines but were much less toxic than colchicine or taxol, confirmed through animal toxicity test. Tricyclic derivatives of the invention also decrease the volume and weight of a tumor and have a strong angiogenesis inhibiting activity in HUVEC cells. Thus, tricyclic derivatives of the present invention can effectively be used as an anticancer agent, anti-proliferation agent and an angiogenesis inhibitor.

WO 2004/113281 A1



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*